VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Title:

Delete

[Curved Ultrasonic Blade Having a Trapezoidal Cross Section]

and add in its place:

--A Curved Ultrasonic End Effector--

In the Specification:

Delete lines 4-8:

[This application is related to the following co-pending patent applications: Application Serial No. 08/---,--- [Attorney Docket No. END-544]; Application Serial No. 08/---,--- [Attorney Docket No. END-550]; and Application Serial No. 08/---,--- [Attorney Docket No. END-559] which are hereby incorporated herein by reference.]

and in its place add:

This application is related to the following co-pending patent applications: Application Serial No. 09/106,686; Application Serial No. 09/106,028; and Application Serial No. 09/106,661, all of which are hereby incorporated herein by reference.

In the Claims:

Delete claims 1-20:

[1. A curved ultrasonic surgical blade, wherein said curved ultrasonic blade comprises:

a concave top surface including a central ridge;

a convex bottom surface wherein said convex bottom surface has a width greater than twice the width of said central ridge; and

first and second side walls connecting said convex bottom surface to said central ridge, said first and second side walls forming a portion of said concave top surface.

2. A curved ultrasonic surgical blade according to Claim 1 wherein said ultrasonic surgical blade has a substantially trapezoidal cross-section.

3. A curved ultrasonic surgical blade according to Claim 2 wherein said convex bottom surface is substantially parallel to an upper surface of said central ridge.

4. A curved ultrasonic surgical blade according to Claim 2 wherein said first side wall intersects said convex bottom surface to form a sharp blade edge.

5. A curved ultrasonic surgical blade according to Claim 2 wherein said first side wall intersects said convex bottom surface to form a blunt blade edge.

6. A curved ultrasonic surgical blade according to Claim 5 wherein said blunt blade edge is square.

7. A curved ultrasonic surgical blade according to Claim 2 wherein said convex bottom surface has a width greater than three times the width of said central ridge.

8. A curved ultrasonic surgical blade according to Claim 7 wherein said first and said second side walls intersect to form a sharp blade edge.

9. A curved ultrasonic surgical blade according to Claim 7 wherein said first and said second side walls intersect to form a blunt blade edge.

10. A curved ultrasonic surgical blade according to Claim 9 wherein said blunt blade edge is square.

11. A balanced ultrasonic surgical instrument including a curved ultrasonic surgical blade, wherein said ultrasonic surgical instrument comprises:

an ultrasonic transmission rod having a proximal end and a distal end;

a balance region including first and second balance asymmetries wherein said balance region extends from a node point at said distal end of said ultrasonic transmission rod to a proximal end of said curved ultrasonic surgical blade, wherein said curved ultrasonic surgical blade comprises:

a distal end;

a proximal end connected to said balance region;

a concave top surface including a central ridge;

a convex bottom surface wherein said convex bottom surface has a width greater than twice the width of said central ridge; and

first and second side walls connecting said convex bottom surface to said central ridge, wherein said first and second side walls form a portion of said concave top surface such that said curved ultrasonic surgical blade has a substantially trapezoidal cross-section.

12. A balanced ultrasonic surgical instrument according to Claim 11, wherein said first and second balance asymmetries are positioned to counter torque created in said proximal end of said blade by said curved ultrasonic surgical blade.

13. A balanced ultrasonic surgical instrument according to Claim 12, wherein said first and second balance asymmetries are positioned such that transverse vibrations in said ultrasonic transmission rod are substantially equal to zero.

14. A balanced ultrasonic surgical instrument according to Claim 12 wherein the balance ratio of the transmission waveguide is less than 1:10.

15. A balanced ultrasonic surgical instrument according to Claim 14 wherein the balance ratio of the transmission waveguide is less than 1:200.

16. A balanced ultrasonic surgical instrument according to Claim 11 wherein said first and said second side walls intersect to form a sharp blade edge.

17. A balanced ultrasonic surgical instrument according to Claim 16 wherein said first and said second side walls intersect to form a blunt blade edge.

18. A balanced ultrasonic surgical instrument according to Claim 17 wherein said blunt blade edge is square.

19. A balanced ultrasonic surgical instrument according to Claim 11 wherein said curved blade and said balance region are bisected by a plane of symmetry, said curved blade being substantially symmetrical on either side of said plane of symmetry, said first balance asymmetry comprising a flat surface in said balance region wherein said first flat surface is substantially perpendicular to said plane of symmetry and said second balance asymmetry comprises a second flat surface in said balance region opposite said first flat surface wherein said second flat surface is substantially perpendicular to said second plane of symmetry.

20. A balanced ultrasonic surgical instrument according to Claim 19 wherein said first balance asymmetry is shorter than said second balance asymmetry.]

Add claims 21-34:

--21. A curved ultrasonic surgical end effector comprising:

a concave treatment segment comprising first and second side walls and a central ridge; and

wherein the treatment segment is symmetrical about a plane bisecting the central ridge.

22. The curved ultrasonic surgical end effector according to Claim 21, wherein the ultrasonic end effector further comprises a convex bottom surface.

23. A balanced ultrasonic surgical instrument comprising:

an ultrasonic transmission rod having a proximal end and a distal end; and

a balance region including first and second balance asymmetries wherein the balance region extends from a node point at the distal end of the ultrasonic transmission rod to a proximal end of a curved ultrasonic surgical end effector, wherein the curved ultrasonic surgical end effector further comprises a concave top surface including a central ridge.

24. The balanced ultrasonic surgical instrument according to Claim 23, wherein the first and second balance asymmetries are positioned to counter torque created in the proximal end of the end effector by the curved ultrasonic surgical end effector.

25. The balanced ultrasonic surgical instrument according to Claim 24, wherein the first and second balance asymmetries are positioned such that transverse vibrations in the ultrasonic transmission rod are substantially equal to zero.

26. The balanced ultrasonic surgical instrument according to Claim 24 wherein the balance ratio of the transmission waveguide is less than 1:10.

27. The balanced ultrasonic surgical instrument according to Claim 26 wherein the balance ratio of the transmission waveguide is less than 1:200.

28. The balanced ultrasonic surgical instrument according to Claim 23 wherein the curved end effector and the balance region are bisected by a plane of symmetry, the curved end effector being substantially symmetrical on either side of the plane of symmetry, the first balance asymmetry comprising a flat surface in the balance region wherein the first flat surface is substantially perpendicular to the plane of symmetry and the second balance asymmetry comprises a second flat surface in the balance region opposite the first flat surface wherein the second flat surface is substantially perpendicular to the second plane of symmetry.

29. The balanced ultrasonic surgical instrument according to Claim 28 wherein the first balance asymmetry is shorter than the second balance asymmetry.

30. A curved ultrasonic surgical end effector, wherein the curved ultrasonic end effector comprises:

a treatment region having a concave-shaped segment, the concave-shaped segment comprising first and second side walls and a central ridge; and

wherein the concave-shaped segment is symmetrical about a plane bisecting the central ridge.

31. The curved ultrasonic surgical end effector according to Claim 22, wherein the convex bottom surface is wider than the central ridge.

32. The curved ultrasonic surgical end effector according to Claim 23, wherein the ultrasonic end effector further comprises a convex bottom surface.

33. The curved ultrasonic surgical end effector according to Claim 32, wherein the convex bottom surface is wider than the central ridge.

34. The balanced ultrasonic surgical instrument according to Claim 23, wherein the first and second balance asymmetries are symmetrical about a plane bisecting the central ridge. --

Please delete lines 4-8 and replace with the following:

This application is related to the following co-pending patent applications: Application Serial No. 09/106,686; Application Serial No. 09/106,028; and Application Serial No. 09/106,661, all of which are hereby incorporated herein by reference.

In the Claims:

Please cancel claims 1-20 without prejudice to the Applicant.

Please add the following new claims:

21. A curved ultrasonic surgical end effector comprising:

a concave treatment segment comprising first and second side walls and a central ridge; and

wherein the treatment segment is symmetrical about a plane bisecting the central ridge.

22. The curved ultrasonic surgical end effector according to Claim 21, wherein the ultrasonic end effector further comprises a convex bottom surface.

23. A balanced ultrasonic surgical instrument comprising:

an ultrasonic transmission rod having a proximal end and a distal end; and

a balance region including first and second balance asymmetries wherein the balance region extends from a node point at the distal end of the ultrasonic transmission rod to a proximal end of a curved ultrasonic surgical end effector, wherein the curved ultrasonic surgical end effector further comprises a concave top surface including a central ridge.

24. The balanced ultrasonic surgical instrument according to Claim 23, wherein the first and second balance asymmetries are positioned to counter torque created in the proximal end of the end effector by the curved ultrasonic surgical end effector.

25. The balanced ultrasonic surgical instrument according to Claim 24, wherein the first and second balance asymmetries are positioned such that transverse vibrations in the ultrasonic transmission rod are substantially equal to zero.

26. The balanced ultrasonic surgical instrument according to Claim 24 wherein the balance ratio of the transmission waveguide is less than 1:10.

27. The balanced ultrasonic surgical instrument according to Claim 26 wherein the balance ratio of the transmission waveguide is less than 1:200.

28. The balanced ultrasonic surgical instrument according to Claim 23 wherein the curved end effector and the balance region are bisected by a plane of symmetry, the curved end effector being substantially symmetrical on either side of the plane of symmetry, the first balance asymmetry comprising a flat surface in the balance region wherein the first flat surface is substantially perpendicular to the plane of symmetry and the second balance asymmetry comprises a second flat surface in the balance region opposite the first flat surface wherein the second flat surface is substantially perpendicular to the second plane of symmetry.

29. The balanced ultrasonic surgical instrument according to Claim 28 wherein the first balance asymmetry is shorter than the second balance asymmetry.

30. A curved ultrasonic surgical end effector, wherein the curved ultrasonic end effector comprises:

a treatment region having a concave-shaped segment, the concave-shaped segment comprising first and second side walls and a central ridge; and

wherein the concave-shaped segment is symmetrical about a plane bisecting the central ridge.

31. The curved ultrasonic surgical end effector according to Claim 22, wherein the convex bottom surface is wider than the central ridge.

32. The curved ultrasonic surgical end effector according to Claim 23, wherein the ultrasonic end effector further comprises a convex bottom surface.

33. The curved ultrasonic surgical end effector according to Claim 32, wherein the convex bottom surface is wider than the central ridge.

34. The balanced ultrasonic surgical instrument according to Claim 23, wherein the first and second balance asymmetries are symmetrical about a plane bisecting the central ridge.

REMARKS

This Amendment A is being filed within one month after the shortened statutory period for response that ended on October 20, 2002. Accordingly, a Petition for a One-Month Extension of Time is attached hereto.

Applicant elects to prosecute species number 1 as disclosed in Figures 1-3. This election is without traverse. Applicant respectfully submits that new claims 21-34 all read on the embodiments disclosed in Figures 1-3.